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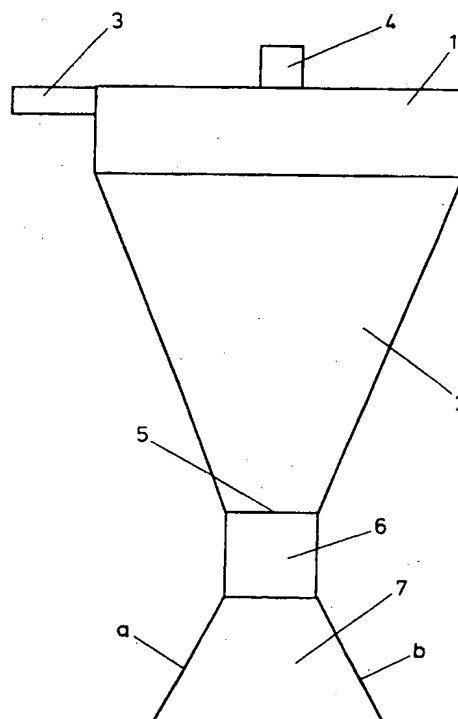
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54 **Hydrocyclone for recovering potato starch.**

57 The invention relates to a hydrocyclone for recovering potato starch. It comprises a cylindrical portion with at least one tangentially directed supply duct and a central overflow orifice, and a conical portion with a central discharge orifice. The conical portion connects coaxially to the cylindrical portion. According to the invention, the discharge orifice 5 in the terminal portion of the conical portion 2 of the hydrocyclone is fitted with a cylindrical intermediate member 6 and a conical nozzle (diffuser) 7 which connects to the cylindrical intermediate member 6.



EP 0 517 965 A1

The invention relates to a hydrocyclone for recovering potato starch from reduced (e.g. grated) potatoes, which has a modified construction compared with conventional hydrocyclone constructions. The present hydrocyclone comprises a cylindrical portion provided with at least one tangentially directed supply duct and a central overflow orifice, and a conical portion with a central discharge orifice, said conical portion connecting coaxially to said cylindrical portion, and is characterized in that said discharge orifice is fitted with a cylindrical intermediate member and a conical nozzle (diffusor) connecting to said intermediate member.

Hydrocyclones are used for separating mixtures of solid particles present in liquid suspensions. When for this purpose a hydrocyclone with effective dimensions and an effective supply pressure is used, the larger solid particles will leave the hydrocyclone mainly through the discharge orifice and the great majority of the fine solid particles are discharged through the overflow orifice.

The figure in the accompanying drawing is a schematic axial section of the hydrocyclone according to the invention for recovering potato starch. There is shown a cylindrical portion 1 with a conical portion 2 connecting thereto, a suspension supply duct 3, an overflow orifice 4 and a discharge orifice 5. As stated, a hydrocyclone according to the invention is characterized by the presence of a cylindrical intermediate member 6 having connected thereto a conical nozzle 7, sometimes referred to by the term 'diffusor'. The angle formed by lines a and b is preferably between 5 and 35°.

The shape and dimensions of a hydrocyclone are selected depending on the nature of the suspension and the treatment it is to be subjected to. It is, for instance, well known that for treating suspensions containing very small particles smaller hydrocyclones must be used than for treating suspensions containing relatively larger particles. However, since a small hydrocyclone has only a minor capacity, for treating suspensions with small solid particles often larger numbers of hydrocyclones are required. Such is the case in the treatment of starch suspensions in a potato starch factory. In such cases, conventionally a plurality of hydrocyclones are combined into a constructive unit. Such units are sometimes referred to as manifold hydrocyclones, multihydrocyclones or hydrocyclone batteries. It will be clear that the invention can also be used in such hydrocyclone installations. The hydrocyclones can be made of all such materials as are allowed by the relevant laws and regulations.

The use of hydrocyclones according to the invention for recovering potato starch from reduced potatoes has a number of important specific advantages. The potato starch that flows through the

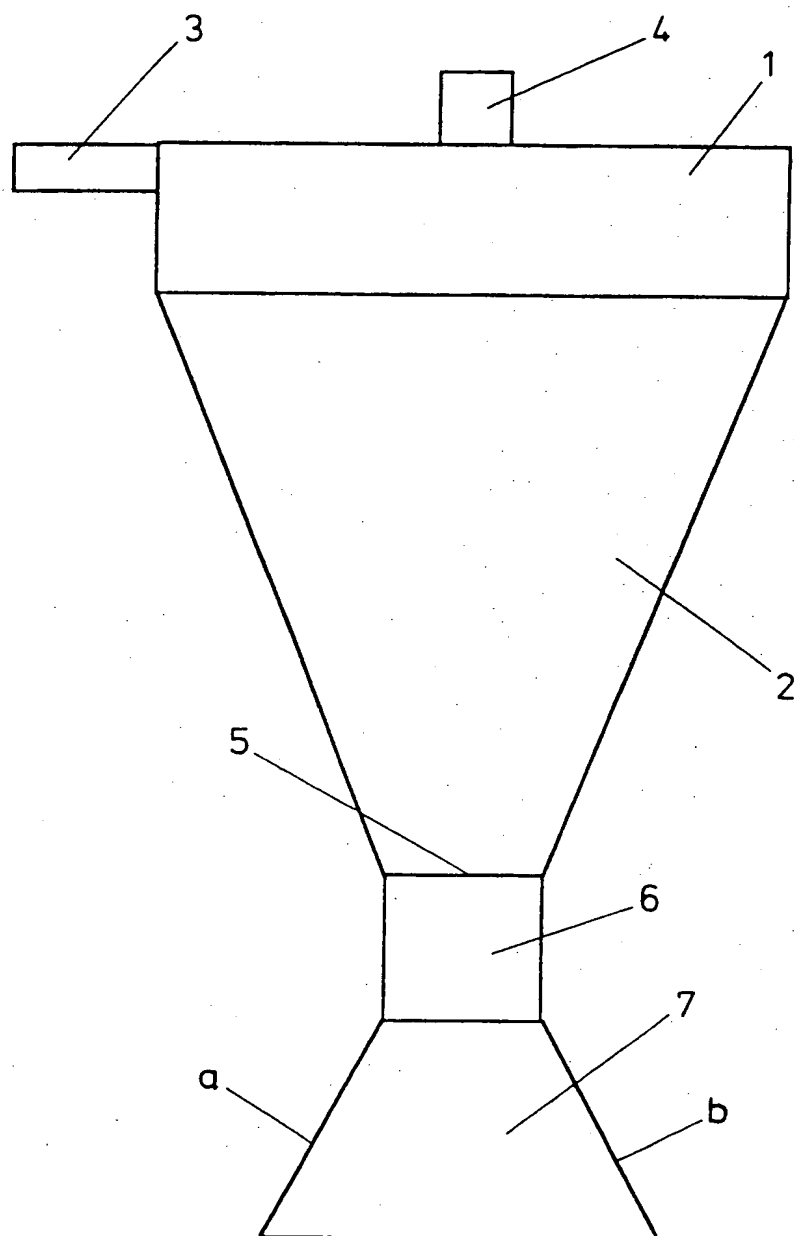
discharge orifice has a great velocity. By means of the conical nozzle this velocity is converted to pressure. This elevated pressure can be used for feeding a next hydrocyclone, in which the separation of the solid particles is continued. In this way, energy can be saved because less pressure needs to be provided by the pumps, which must carry the suspension through the hydrocyclone installation.

Further, with the hydrocyclones according to the invention, a surprisingly clear-cut separation of the potato starch granules can be accomplished. This means that the overflow fraction contains relatively few large particles while the discharge fraction contains relatively few small particles. The construction of the hydrocyclones according to the invention is such that they do not easily get clogged. The grated potato pulp obtained in the potato starch industry usually contains sand residues which as a result of their abrasive action may cause corrosion and wear of the discharge orifice. The cylindrical intermediate member ensures that the diameter of the discharge orifice remains constant. Without this intermediate member there is a risk that in the course of time the discharge orifice will widen as a result of corrosion (wear). The intermediate member thus functions as a wear-prevention member. Further, the cylindrical intermediate member has a favourable influence on the controllability and stability of the hydrocyclone.

The hydrocyclone according to the invention is utilized in the recovery of potato starch from potatoes. For this purpose often a combination of a multiplicity of hydrocyclones is used. It has been found that such a hydrocyclone installation can handle starch suspensions with a high solid content, yielding an excellent separation which is better than in the hydrocyclones used heretofore.

Claims

1. A hydrocyclone for recovering potato starch, comprising a cylindrical portion provided with at least one tangentially directed supply duct and a central overflow orifice, and a conical portion with a central discharge orifice, said conical portion connecting coaxially to said cylindrical portion, characterized in that said discharge orifice 5 in the terminal portion of the conical portion 2 of the hydrocyclone is fitted with a cylindrical intermediate member 6 and a conical nozzle (diffusor) 7 connecting to said cylindrical intermediate member 6.





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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	SOVIET INVENTIONS ILLUSTRATED Section Ch, Week E31, 15 September 1982 Derwent Publications Ltd., London, GB; Class J, AN 65389 E/31 & SU-A-869 821 (KUZNT COAL ENRICH) 7 October 1981 * abstract *	1	B04C5/14 C08B30/04
X	GB-A-2 214 841 (BOART) * the whole document *	1	
X	FR-A-1 134 443 (BATAAFSCHE PETROLEUM MAATSCHAPPIJ) * page 2, left column, line 36 - line 43 * * page 2, right column, line 22 - line 36 * * figure 1 *	1	
A	GB-A-708 673 (STAMICARBON) * page 1, line 87 - page 2, line 13 * * page 3, line 28 - line 45 * * figure 1 *	1	
A	FR-A-1 220 426 (ERTEKESITO VALLALAT) * page 4, left column, line 26 - line 52 * * figures 3,4 *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 DECEMBER 1991	Examiner LAVAL J.C.A.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, corresponding document			

